proportional to the depth of the sun's atmosphere. At first sight the loss of $234{\cdot}6^\circ$ appears to be a trifling reduction of energy; yet if we consider the mechanical equivalent which it represents, we cannot doubt its adequacy to supply the motive force expended in producing the observed movement of the attenuated matter within the solar atmosphere. Dividing the temperature of the photosphere, 4,035,000°, by $234{\cdot}6$, it will be found that the computed, apparently insignificant, retardation exceeds $\frac{1}{17{,}000}$ of the entire dynamic energy developed by the sun—an amount fully 15,500 times greater than the solar energy transmitted to all the planets of our system! Making due allowance for the extreme attenuation, and the small quantity of matter to be moved, the most exaggerated computation of the probable expenditure of mechanical energy called for in keeping up the currents of the solar atmosphere, fails to establish an amount at all equal to that capable of being generated by utilising 234° of the radiant heat emanating from the photosphere.

In view of the foregoing statements and the demonstrations contained in the previous article on solar heat, we cannot consistently refuse to accept the conclusion, that the temperature at the surface of the photosphere is very nearly 4,036,000° Fah. J. ERICSSON

NOTES

THE Regius Professor of Physic at Cambridge (Dr. Bond) has issued a schedule of lectures on subjects connected with the study of medicine which will be delivered during the Academical year 1871-2. The following are the arrangements for this Term: Prof. Liveing will lecture on practical chemistry on Tuesdays, Thursdays, and Saturdays, at 1 P.M., commencing October 10. The Linacre lecturer will deliver a course of medical clinical lectures on Fridays, at 10 A.M., commencing October 13. The Professor of Anatomy (Dr. Humphry) will lecture on practical anatomy on Mondays, Wednesdays, and Fridays, at 6 P.M., commencing October 16. Mr. C. Lestourgeon, M.A., will on October 19 commence a course of surgical clinical lectures, and will continue the same on each Thursday during Term, at 11 A.M. Anatomy and Physiology will be the subject of a course by the Professor of Anatomy, commencing October 21, at 1 P.M., and continued on Tuesdays, Thursdays, and Saturdays at the same hour. The Professor of Zoology and Comparative Anatomy (Mr. A. Newton) will lecture on those subjects on Mondays, Wednesdays, and Fridays, at 1 P.M., commencing October 23. Special departments in chemistry will be the subject of lectures by the professor of that faculty on Tuesdays, Thursdays, and Saturdays at noon, commencing October 26. Practical histology will form a separate course under the superintendence of Dr. Humphry, commencing October 28 at 11.30 A.M., and continued each succeeding Saturday until its completion.

THE Franklin Institute of Philadelphia announces the following synopsis of lectures for 1871-72. The regular course will comprise a series of forty lectures, divided as follows:—1. "On Physics and Mechanics," by John G. Moore, M.S. 2. "On General Physics and Acoustics," by Prof. Edwin J. Houston. 3. "On Guns, Gunpowder, and Projectiles," by Lieut. C. E. Dutton. 4. "On the Chemistry of the Earth and of the Vital Process in Animals and Plants," by Prof. Samuel B. Howell, M.D. 5. "On the History of Alchemy," by William H. Wahl, Ph.D. 6. "On the Metallurgy of Iron and Steel," by Thos. M. Brown, Ph.D. Besides the lectures enumerated, the Institute has arranged with a number of eminent lecturers for the delivery of a popular course of scientific subjects, and it is believed that the plan here indicated, of offering a series of lectures brilliantly and largely illustrated, will go far towards attracting the attention and interest of the public to these most important subjects.

THE Managers of the London Institution, Finsbury Circus, announce the following programme of lecture arrangements for the coming season. The courses of educational lectures will be as follows:—First course, commencing Monday, October 30: Eight lectures "On Elementary Physiology," by Prof. Huxley. Second Course, commencing Monday, January 15, 1872: Eight Lectures "On Elementary Chemistry," by Prof. Odling. Third Course, commencing Monday, March 11, 1872: Six lectures "On Elementary Music," by Prof. Ella, director of the Musical Union. Fourth Course, commencing Monday, April 29, 1872: Six Lectures "On Elementary Botany; with special reference to the Classification of Plants," by Prof. Bentley. A Course of Four Lectures, adapted to a juvenile auditory, "On the Philosophy of Magic," by Mr. J. C. Brough, principal librarian in the London Institution, will be commenced on Thursday, December 21. A Course of Two Lectures "On Science and Commerce; illustrated by the Raw Materials of our Manufactures," by Mr. P. L. Simmonds, will be commenced on Thursday, November 23. This course will be illustrated by a large collection of beautiful and interesting specimens of animal and vegetable products. The following lectures will probably be delivered at the Conversazioni of the coming season:—"The Teachings of the Spectroscope," by Dr. William Huggins; "The Homing, or Carrier Pigeon: its Natural History, Training, and Exploits," by Mr. W. B. Tegetmeier; "The Sun," by Mr. J. Norman Lockyer; "Two Years' Gleanings in Syria and Palestine," by Captain Richard F. Burton; "The Haunts of Old Londoners," by Mr. Thomas Archer; "On Colour," by Prof. Barff. The evening class for elementary chemical analysis will commence work, under the direction of Prof. H. E. Armstrong, on Tuesday, November 7.

IN his address at the recent opening of the new Mechanics' Institute at Bradford, Mr. W. E. Forster, M.P., remarked that when institutions of this kind were first established they were intended to give to mechanics scientific knowledge; but it was discovered that that was impossible, except in rare cases, because mechanics had no elementrary teaching on which could be grounded scientific knowledge, and consequently these institutes were obliged to be turned very much into elementary schools and night schools, rather than into the teaching of science and higher literature, which we had hoped to give to our mechanics. A conviction, however, is now gaining ground that an essential portion of this elementary teaching consists of instruction in the rudiments of science, which would be of material advantage to none more than to the working classes.

THE open Scholarship in Natural Science, established this year at St. Mary's Hospital, has been gained by Mr. E. J. Edwards. This Scholarship is worth 40*l.* a year for three years. The Exhibition of 20*l.*, awarded at the same time, has been gained by Mr. Giles. Both gentlemen are students at the University of London.

THE Ettles Scholarship at the University of Edinburgh, which is annually awarded to the most distinguished graduate, has been given to Dr. Urban Pritchard, a student of King's College, London. Dr. Pritchard also gained a gold medal for original researches on the structure of the organ of Corti, conducted by him in the physiological laboratory of King's College.

THE vacancy in the Botanical Department of the British Mseuum, caused by the promotion of Mr. Carruthers, has been filled by the appointment of Mr. James Britten, late assistant in the Royal Herbarium, Kew.

MR. ROBERT ROUTLEDGE, a scientific graduate in honours of the University of London, has been appointed conductor of the classes in Chemistry and Physical Science at the Manchester Mechanics' Institute. These classes are intended to encourage technical education among the working classes, and consist of courses on applied mechanics, steam and the steam-engines, acoustics, light and heat, magnetism and electricity, inorganic chemistry, and practical chemistry, held in the evening, and fully illustrated by experiments, diagrams, and models. The fees for members of the institution are, with the exception of the class of Practical Chemistry, one shilling per session.

WE regret to hear from German advices, of the death of Prof. Schweigger-Seidel, of Leipzig, assistant Professor in Histology to Prof. Ludwig. Prof. Schweigger-Seidel was well known for his careful and accurate researches on several difficult points of histology, especially connected with nerve-endings in the salivary glands, the lymphatic system, and the cornea.

THE *Geological Magazine* records the death, at the age of thirty, of Dr. Georg Justin Carl Urban Schloenbach, Professor of Geology of the Polytechnic Institute of Prague. Previously to receiving this appointment, Dr. Schloenbach had resided in Vienna, where he was an active and energetic member of the k. k. Geol. Reichsanstalt. It was whilst engaged for this Institute, travelling in Servia, that his constitution broke down, under the tremendous fatigue which geologists in these parts have sometimes to undergo. Camping out in what is by no means a tropical latitude brought on rheumatism, and shortly afterwards congestion of the lungs ended his life, after a painful but short illness.

GOOD progress is reported from the Hartley Institute, Southampton, both the day and evening classes being in a very flourishing condition. During the past year as many as 420 students attended these classes. As Science forms a large proportion of the instruction given, there can be but little doubt that the value of the technical knowledge so disseminated will be very great.

THE next Actonian Prize or prizes offered by the Royal Institution, will be awarded in the year 1872 to an essay or essays illustrative of the wisdom and beneficence of the Almighty. The subject is "The Theory of the Evolution of Living Things." The prize fund is two hundred guineas, and it will be awarded as a single prize, or in sums of not less than one hundred guineas each, or withheld altogether, as the managers in their judgment shall think proper. Competitors for the prize are requested to send their essays to the Royal Institution, Albemarle Street, on or before June 30, 1872, addressed to the secretary, and the adjudication will be made by the managers in December 1872.

THE First Commissioner of Works and Public Buildings announces that he intends again to distribute this autumn, among the working classes and the poor inhabitants of London, the surplus bedding-out plants in Battersea, Hyde, the Regent's, and Victoria Parks, and in the Royal Gardens, Kew. If the clergy, school committees, and others interested, will make application to the superintendents of the parks nearest to their respective parishes, or to the director of the Royal Gardens, Kew, in the cases of persons residing in that neighbourhood, they will receive early intimation of the number of plants that can be allotted to each applicant, and of the time and manner of their distribution.

A ROYAL Commission has been appointed at Melbourne for Foreign Industries and Forests, the members being the Hon. S. H. Bindon, Chairman; the Hon. G. W. Cole, M.L.C.; the Hon. R. Hope, M.D., M.L.C.; Mr. R. Ramsay, M.P.; Mr. J. F. Levien, M.P.; Mr. W. Witt, M.P.; Mr. T. M. B. Phillips, M.P.; Mr. F. Von Mueller, C.M.G., F.R.S; Mr. Thos. Black, President of the Acclimatisation Society, M.D.; the Rev. J. I. Bleasdale, D.D.; Mr. Paul de Castella; Mr. C. Hodgkinson; Mr. R. Brough Smith, F.G.S.; Mr. John Hood. The objects of the Commission are to consider and report how far it may be practicable to introduce into that country branches of industry which are known to be common and profitable among the farming population of Continental Europe; to specify which of such industries are most suitable to the soil, climate, and circumstances; to report on the best means of promoting their introduction into Victoria; to report how far the labour of persons at the disposal of the State may be advantageously used for that purpose; to further consider and report on the best means of promoting the culture, extension, and preservation of State forests in Victoria; and to report on the introduction of such foreign trees as may be suitable to the climate and useful for industrial purposes.

THE Government of India have resolved to organise a statistical department for the purpose of ascertaining and conserving the internal resources of India. Dr. Hunter will be the first Director-General of this new department.

IT seems hardly credible that no public monument exists in this country to the discoverer of the circulation of the blood This defect is now likely to be remedied, and preliminary steps have been taken at Folkestone, Harvey's birthplace, to mark the tercentenary of his birth by the erection of a suitable public monument. At a meeting convened by influential requisition—the Mayor of Folkestone in the chair—Mr. George Eastes, M.B., with whom the movement originates, read an interesting sketch of his life, labour, and character. Dr. Bateman, Dr. Bowles, and other local gentlemen, moved resolutions appointing a numerous committee, nominating Dr. Bence Jones, F.R.S., treasurer, the Town Clerk of Folkestone and Mr. George Eastes, M.B., London, as honorary secretaries.

AT the last sitting of the French Academy, an important paper was read on the results of M. Pasteur's long and patient researches into the causes and the best mode of extirpating that terrible disease of the silkworm, the *pébrine*. His efforts appear to have been eminently successful in checking the epidemic, by the simple means of destroying the eggs from all moths which can by any possibility have become tainted. The yield of healthy eggs is now again increasing rapidly in the south of France; and in a few years the disease will probably be all but exterminated. It is hoped that when the National Assembly again meets, some public recognition will be made of M. Pasteur's eminent services.

THE *Observer* comments with great justice on the disproportion between the emoluments for divinity, and for legal, mathematical, and classical instruction at Oxford—"While the salaries of five legal professors, in the aggregate, reach 2,000*l*., those of the Latin and Greek professors reach 1,100*l*.; those of three professors of metaphysics, &c., reach 1,100*l*.; and those of three mathematical professors reach 1,400*l*.—showing an average of about 480*l*. for each professor; the six professors of divinity enjoy the munificent income of upwards of 1,000*l*. a year each, with houses into the bargain." It adds, "That Oxford should pay 6,300*l*. a year for doctrinal divinity, and only 500*l*. a year for Greek, is a quaint anomaly, to say the least." If, however, our contemporary had included statistics of the remuneration for science, it would have strengthened its case considerably.

THE *Journal of Botany* states that a great desideratum in botanical literature is shortly to be supplied. Considerable progress has been made in printing a second edition of Pritzel's "Thesaurus Literaturæ Botanicæ," a catalogue of all works ever published in all departments of botanical literature, now twenty years old.

WE have received from Mr. Marshall Hall a history of the cruise of the *Norna*, giving in a pleasant chatty form the main results of the expedition as they would interest the public at large. The more important zoological details will be found in another column.

WE are glad to observe that the conductors of the *Scottish*

Naturalist are able to announce that with the next number the size of the magazine will be increased to 40 pages. Several important and interesting contributions are announced for 1872; and we hope that this useful magazine will meet with the support and circulation that it deserves.

PROF. J. LAWRENCE SMITH, in the September number of the *American Journal of Science*, gives the following analysis of the meteorite stone which fell near Searsmont, Maine, on the 21st of May of this year:—

Nickeliferous Iron	14·63
Magnetic Pyrites	3·06
Olivine	43·04
Bronzite, a hornblende with a little albite or orthoclase and chrome iron	39·27

IT is stated that a crater of a new volcano has been formed on the mountain near Bivoria in the province of Girgenti in Sicily.

THE cyclone which visited St. Thomas and Antigua on the 21st of August, continued its course towards the Bahamas, and reached Turks Island on the 22nd. The storm occupied about eight hours in travelling from St. Kitts to St. Thomas, 150 miles, and so had a rate of progress of about 18¾ miles per hour, but from St. Thomas to Turks Island the velocity decreased to about 12¼ miles per hour, taking about 31 hours to travel 380 miles.

A SLIGHT shock of earthquake was felt at Kingston, Jamaica, at 4 P.M. on the 3rd of September.

THE star showers of the 10th and 11th of August last were attentively watched in America as in Europe. At Sherburne, New York, according to the American *Journal of Science*, a party of six persons watched between 11.40 and 12, and saw 48 meteors. In the next hour 143 were seen, and in the first eighteen minutes of the next hour 32. The latitude of the radiant point was 1½° less than that of the nebula in Perseus.

Les Mondes gives the particulars of a remarkable meteorite observed at Marseilles by M. Coggia, on the 1st of August. It made its appearance at 10h. 43m., Marseilles mean time, at a point situated near the centre of the triangle formed by ζ Serpentis and θ and η Ophiuchi. The course was remarkably slow, in an easterly direction; at 10h. 45m. 30s. it passed between μ_1 and μ_2 Sagittarii, and at 10h. 46m. 35s. it almost occulted Saturn. The course became then still slower; at 10h. 49m. 50s. it passed a little below ο Sagittarii, and at 10h. 50m. 40s. south of the star *f* of the same constellation. At 10h. 52m. 30s. it passed between ι and θ Capricorni, where it remained for a moment stationary, then changing its course, it took a northerly direction, leaving at 10h. 57m. 50s. the star υ Aquarii 1° 30′ to the west, and again stopping, at 10h. 59m. 30s., a little south-west of β Aquarii. Regaining its original easterly direction, it then passed β Aquarii, stopping again near ζ Aquarii, and then fell rapidly in a perpendicular direction near δ Capricorni, and leaving to the east the almost full moon. It finally disappeared a little north of θ Pisc. austral. at 11h. 3m. 28s. The diameter, which was at first about 15′, diminished rapidly, was a little over 4′ when it approached Saturn, and finally had scarcely more than the apparent size of Venus. During its perpendicular fall to the horizon, it gave out vivid scintillations.

THE *Times of India* gives the following story:—Advices from Ihangara state that at a place about forty miles distant on the hills, a thunderbolt fell on the 22nd of August after a heavy downpour of rain. The ground was literally cut up in consequence, and the whole of the huts standing there as well as their inmates were swallowed up in the chasm. Such a catastrophe has never been known in Sind. Some fifty or sixty persons perished.

ON the 11th of July a strong shock of earthquake was felt at Valparaiso in Chile, preceded by a loud rumbling noise. On the 20th, at 11 P.M., a very severe shock was felt at Santiago de Chile.

THE following account of a hairy family appears in the *Indian Daily News*:—"The hairy family of Mandalay consists of a woman of about forty-five years of age, a man of twenty, and a girl of eleven, with hair over every part of their faces, forehead, nose, and chin, varying in length from three inches to a foot, and exactly the colour and texture of that on a skye-terrier. The hair of their heads, on the contrary, is just the same as on any ordinary Burman; they appear to be quite as intelligent as the ordinary Burmans. The father of the woman was the first of the hairy progeny. He married an ordinary Burman woman, and the issue of the union was the present hairy head of the family. She married an ordinary Burman, and has issue, a son about twenty-three years of age, not hairy, and the boy and girl alluded to. The Burmese explanation of the phenomenon is, to say the least, curious, and might possibly possess a special interest for Mr. Darwin. These hairy people would be worth a fortune to the enterprising Barnum if he could get hold of them, but the King will not allow them to go out of his dominions."

SCIENTIFIC INTELLIGENCE FROM AMERICA [*]

THE fourth Annual Report of the Trustees of the Peabody Museum of American Archæology and Ethnology has made its appearance, and presents a gratifying picture of the progress of this great establishment. The most important additions during the year have been a collection of stone implements from Cape Cod presented by Mr. Samuel H. Russell, a series of duplicates from the Christie collection of London, and specimens obtained from explorations in Tennessee by Mr. Dunning, and in Central America by Dr. Berendt. These are supplemented by numerous single donations of greater or less value. In the course of some critical observations upon the specimens received by the Museum, attention is called to the great value of a collection of crania and human bones obtained from certain mounds in Kentucky by Mr. S. S. Lyon, in the course of explorations made under the combined auspices of the Smithsonian Institution and of the Peabody Museum. The peculiarities of the crania of the American Indians have already been referred to by various writers, but some curious facts are detailed in the report in regard to other portions of the skeleton. Thus the ulna and radius, as compared with the humerus, were found to be much larger in the mound Indians, while the length of the tibia, as compared with the femur, is longer in the whites. In quite an unusual number of Indian skeletons the two fossæ at the lower end of the humerus were found to communicate, producing a perforation. This feature, rarely met with in the white races, occurs quite frequently in the mound remains, while in the black race it appears to be still more frequent. An additional peculiarity of the mound bones consists in the flattening of the tibia, which, until the date of the present publication, has not been recorded as occurring in America, although remains from the dolmens of France, the quaternary drift of Clichy, and the burial caves of Cro-Magnon and Gibraltar, exhibit this in a very marked degree. As regards the pelvis, the breadth in the Indian races is found to be less than in the whites, while the three diameters of the brim of the true pelvis are greatest in the Indians. The transverse diameter and the size of the outlet of the pelvis are much the largest in the Indian, while the sacrum is less curved, supplying conditions which in the process of parturition are more favourable to the Indian women.—We have already referred at various times to enterprises on the part of the Peruvian Government in exploring the less-known portions of that country, and we find in late South American journals details of a movement looking toward the examination of the regions of the Ucayale and Urubamba. The object of the expedition is to find a port which will open up to the Department of Cuzco a communication with the main branch of the Amazon, and thence to the Atlantic. The work is to be under the direction of Mr. Tucker, favourably known in similar enter-

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[*] Communicated by the Scientific Editor of *Harper's Weekly*.